REMARKS

Reconsideration and allowance of the subject application are respectfully solicited.

Claims 1 through 3 and 5 through 16 are pending, with Claims 1, 9, and 10 being independent. Claims 1, 9, and 9 have been amended. Claims 14 through 16 have been added.

Claims 1 through 3 and 5 through 13 again were variously rejected under 35 U.S.C. § 103 over various combinations of US 2002/0025164 A1 (Suzuki), Applicant's alleged admitted prior art (e.g., Fig. 8), US 2002/0051071 A1 (Itano, et al.), and newly-cited U.S. Patent No. 6,118,115 (Kozuka, et al.). All rejections are respectfully traversed.

Claim 1 recites, *inter alia*, a pad for outputting the video signals (output by the amplifier) to an outside of the chip, the pad being arranged only along a side portion of the chip not parallel to the side portion along which the first shift register is arranged (the second shift register having a lower driving frequency).

Claim 9 recites, *inter alia*, a pad for supplying a voltage to the amplifier (the amplifier outputting video signals), the pad being arranged only along a side portion of the chip not parallel to the side portion along which the first shift register is arranged (the second shift register having a lower driving frequency).

Claim 10 recites, *inter alia*, a pad for supplying a predetermined voltage or a ground voltage to an active element included in a pixel in the pixel region, the pad being arranged only along a side portion of the chip not parallel to the side portion along which the first shift register is arranged (the second shift register having a lower driving frequency).

However, Applicants respectfully that none of Suzuki, Applicants' alleged admitted prior art, Itano, et al., and Kozuka, et al., even in the proposed combinations, assuming, *arguendo*, that the documents could be combined, discloses or suggests at least the above-discussed claimed features as recited, *inter alia*, in Claims 1, 9, and 10.

The Official Action states that Suzuki's electrode 116B constitutes the pad of Claim 1, stating at page 3 that "an average output signal of the pixels 130 is output through 116b for generating image data". Applicants respectfully traverse these statements. Applicants respectfully note that Suzuki's relied-upon paragraphs read as follows (emphasis added):

> [0058] Many pixels 120 are provided in the effective pixel part 110A, and image data imaged by the electronic camera is generated using the output signals (pixel data) from these pixels 120. The available pixel part 110B is provided along and inside periphery (in the drawing, indicated by a thick broken line) of the light-receiving region 110. ***Pixels 130 (the light detection part) of this available pixel part 110B*** are distant from the center of the light-receiving region 110, so great variation can be expected in the characteristics of each pixel in the manufacturing process, ***and their***

output signals are not used to generate image data.

[0059] **However, some pixels 130** that are of the available pixel part 110B and are in a margin area adjacent to the effective pixel part 110A can generate a signal of high reliability, analogous to the signal of pixels 120 in the effective pixel part 110A. Therefore, in this first embodiment, the output signals from pixels 130 in the available pixel part 110B near the effective pixel part 110A **are used as signals indicating the degree of shading** occurring in image data obtained from pixels 120 in the effective pixel part 110A, and shading correction is performed. A plurality of blocks (A-G in the example in the drawing) are provided in the available pixel part 110B, each block with multiple pixels 130 (e.g., a 3×3 block of pixels, a 5×5 block if pixels, etc.).

[0060] Solid-state imaging device 100 has formed on it an output amplifier 115A for amplifying and reading the output signals

(voltage) of each pixel 120 in the effective pixel part 110A and a pad electrode 116A for externally outputting signals indicating image data. Also, an output amplifier 115B for each pixel 130 in the available pixel part 110B and a pad electrode 116B are formed separately from amplifier 115A and pad electrode 116A. By thus providing the output amp 115B separate from the output amp 115A, the output signal from the available pixel part 110B indicating shading can be quickly read externally, such as by an analog signal processing circuit 227 (FIG. 2), thereby shortening the processing time needed for shading correction.

[0061] Consider an exemplary instance of finding a correction value for shading in the horizontal direction of the light-receiving region 110 in which the average outputs at each block A, B, C, D, and E in the available pixel part 110B are 10:9:8:6:4. **Shading is corrected** by multiplying the image data (raw data) obtained as the result of taking a picture by the multiplication factors (correction

sensitivity multiples) 1:10/9:10/8:10/6:10/4 along the horizontal direction from the center to the edge. The result is that image data with uniform luminance can be obtained using the entirety of the effective pixel part 110A.

[0062] Furthermore, by modifying the multiplication factors (correction sensitivity multiples) to values smaller than the ratios noted above, it is possible to deliberately cause luminance variation that is about the same as shading in silver chloride photography. As a result, it is possible to obtain photographs similar to silver chloride photographs.

[0063] Also, **shading correction** in the vertical direction of the light-receiving region 110 may be accomplished by **reading the average output signals of the pixels 130** of blocks E, F, and G and performing the same sort of processing.

[0064] Furthermore, if a CCD-type image sensor is used as the solid-state imaging device 100,

> the output signals of each pixel 130 in each block A, B, C, D, and E of the available pixel part 110B can be read at high speed by partial reading (i.e., reading separately from the two output amps 115A and 115B). If a [C]MOS-type image sensor is used as the solid-state imaging device 100, random access is possible. For a [C]MOS-type image sensor, the output signals of each pixel 130 in each block A, B, C, D, and E of the available pixel part 110B can easily be read locally, and the relevant output signals indicating the shading amount can be read at high speed.

Applicants respectfully submit that Suzuki, et al. shows, in paragraphs [0059], [0061], and [0063], performing shading correction using the average output signals of the pixels 130, as noted in the Official Action; however, Suzuki, et al. expressly states in paragraph [0058] that pixels 130 output signals are NOT used to generate image data — Applicants do not regard the "shading correction" as constituting the claimed video signals output as claimed.

The Official Action states that Suzuki, et al. does not show the pad being arranged only along a side portion of the chip different from the side portion along which the first shift register is arranged, and therefore relies upon Applicants' Fig. 8, stating, at page 5 that such is shown. Applicants respectfully traverse this reliance.

Applicants respectfully submit that it is apparent from Applicants' specification that the signals amplified by the amplification circuit 207 in Fig. 8 are output through pad 105 in Fig. 7A, and that the pads 105 are arranged closer to the longer side of the chip along which the horizontal scanning circuit 205 is arranged; accordingly, what is disclosed is that pad 105 is arranged along the *same* side portion of the chip as the side portion along which the first shift register is arranged. If the Official Action is contending that somehow Fig. 8 would be rotated by 90 degrees before the attempt to combine the same with Suzuki, et al., Applicants respectfully submit that such a rotation would not be sensical and thus the combination would be impossible.

As for Kozuka, et al., the Official Action states that such shows pad 100' in Fig. 7 for providing a voltage to the amplifier and pad 100 in that figure for providing a voltage to an active element. Applicants respectfully traverse this statement and wish to emphasize that Kozuka, et al. is silent as to the above-discussed claimed features; for example, pad 100 in Fig. 7, which is connected to item 101, is ***not*** a pad ***being arranged as claimed,*** for supplying a predetermined voltage or a ground voltage to an active element included in a pixel in the pixel region; and Applicants' Fig. 8 does not remedy Kozuka, et al.'s deficiencies.

Applicants further respectfully submit that there has been no showing of any indication of motivation in the cited documents that would lead one having ordinary skill in the art to arrive at the above-discussed claimed features as recited, *inter alia*, in Claims 1, 9, and 10.

The dependent claims are also submitted to be patentable because they set forth additional aspects of the present invention and are dependent from independent

claims discussed above. Therefore, separate and individual consideration of each dependent claim is respectfully requested.

Applicants submit that this application is in condition for allowance, and a Notice of Allowance is respectfully requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

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